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United States  
Department of  
Agriculture

Soil  
Conservation  
Service

Spokane,  
Washington



in cooperation with

Department of Ecology  
State of Washington

# Water Supply Outlook for Washington

as of MARCH 1, 1983

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## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: Fresh powder snow on Elephant Mountain, near the West Fork of Hyalite Creek, in Montana.

## PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building, 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4420 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U. S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

## PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 --- for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 --- for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 --- and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.



# **WATER SUPPLY OUTLOOK FOR WASHINGTON**

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

*Issued by*

**PETER C. MYERS**  
Chief  
SOIL CONSERVATION SERVICE  
WASHINGTON, D C

|||||  
*Released by*

**LYNN A. BROWN**  
STATE CONSERVATIONIST  
SOIL CONSERVATION SERVICE  
SPOKANE, WASHINGTON

*In Cooperation with*

**DONALD W. MOOS**  
DIRECTOR  
DEPARTMENT OF ECOLOGY  
STATE OF WASHINGTON

|||||  
*Report prepared by*

**ROBERT T. DAVIS, Snow Survey Supervisor**

**NORINE P. KENT, Statistical Assistant**

SOIL CONSERVATION SERVICE  
360 U.S. COURTHOUSE  
SPOKANE, WASHINGTON 99201

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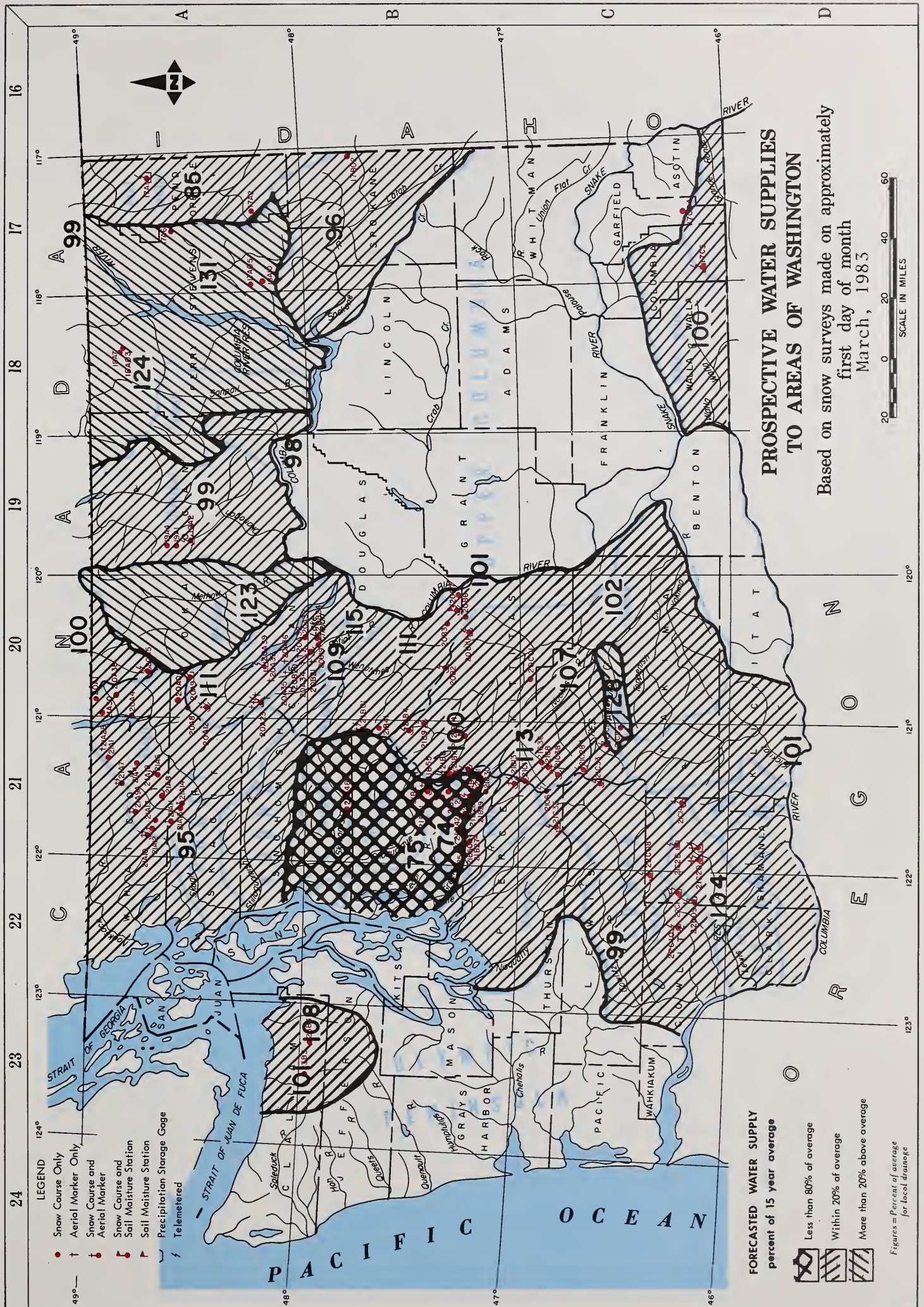
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INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE						LOWER COLUMBIA DRAINAGE					
Pend Oreille River						Asotin Creek					
Boyer Mountain	17A2	7	31N	43E	5250	Spruce Springs	17C4	9	8N	40E	5700
Bunchgrass Meadow	17A1SP	24	37N	44E	5000						
Kettle River						Touchet River					
Summit G. S.	18A7	20	39N	35E	4600	Touchet No. 2	17C5SP	6	7N	40E	5530
Spokane River						Lewis River					
Rogged Ridge	17B02	12	27N	45E	3333	June Lake	22C09SP	26	8N	5E	3200
Colville River						Lone Pine Shelter	21C26SP	8	9N	7E	3800
Baird	17A6	19	36N	42E	3215	Plains of Abraham	22C13SP	35	9N	5E	4400
Stranger Mountain	17A5	26	31N	38E	4990	Spencer Meadow	21C20SP	16	8N	7E	3400
Lago	18A10	6	29N	38E	3370	Surprise Lakes	21C13SP	14	7N	8E	4250
Okanogan River						Cowlitz River					
Mutton Creek No. 1	19A1	30	37N	24E	5700	Coyuse Pass	21C6	15	16N	10E	5300
Mutton Creek No. 2	19A4	19	37N	24E	6000	Pigtail Peak	21C33SP	11	13N	11E	5900
Salmon Meadows	19A2SP	33	37N	24E	4500	Potato Hill	21C14SP	36	10N	10E	4500
Methow River						Sheep Canyon	22C10SP	12	8N	4E	4050
Harts Pass	20A5SP	7	37N	18E	6500	Strawberry	22C08SP	9	10N	6E	3280
Chelan Lake Basin						Nisqually River					
Lyman Lake	20A23SP	18	31N	16E	5900	Paradise Park (New)	21C35SP	13	15N	8E	5500
Park Creek Ridge	20A12SP	18	34N	16E	4600	White River					
Rainy Pass	20A9SP	21	35N	17E	4780	Coral Pass	21B13SP	30	18N	11E	6000
Mirror Lake	20A39	30	31N	18E	5600	Green River					
Entiat River						Airstrip	21B24P	18	20N	11E	1800
Brief	20B19	34	28N	19E	1600	Charley Creek	21B25	27	21N	8E	1200
Entiat Meadows	20A33a	28	31N	17E	4540	Cougar Mountain	21B42SP	21	21N	9E	3200
Entiat River Trail	20A34a	2	29N	17E	3325	Grass Mountain No. 2	21B27	14	20N	8E	2900
Fox Camp	20A36a	17	30N	18E	6310	Grass Mountain No. 3	21B28	12	20N	8E	2100
Pope Ridge	20B20	22	29N	18E	3540	Lester Creek	21B29	36	20N	10E	3100
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540	Lynn Lake	21B50	22	20N	8E	4000
Pugh Ridge	20A32a	34	30N	18E	6725	Sawmill Ridge	21B31	5	19N	11E	4700
Shady Pass	20A37	20	29N	19E	6200	Stampede Pass	21B10SP	25	21N	11E	3860
Snow Brushy	20A35a	21	30N	17E	3910	Twin Camp	21B30	18	19N	11E	4100
Tammy Creek	20B21a	10	28N	18E	4900	Cedar River					
Wenatchee River						City Cabin	21B3	10	21N	10E	2390
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240	Mt. Gardner	21B21P	30	22N	10E	3300
Blewett Pass No. 2	20B2SP	35	22N	17E	4270	Snoqualmie River					
Stevens Pass	21B1SP	14	26N	13E	4070	Alpine Meadow	21B48	31	27N	9E	3500
Trough #2	20B25SP	10	20N	20E	5310	Olallie Meadows	21B2P	19	22N	11E	3625
Squilchuck Creek						Olallie Meadows East	21B55SP	20	22N	11E	3700
Beehive Springs	20B3	12	21N	19E	4400	Skagit River					
Stemilt Creek						Beaver Creek Trail	21A4	35	39N	12E	2200
Upper Wheeler	20B6	30	21N	20E	5000	Beaver Pass	21A1	9	39N	12E	3680
	20B7SP	30	21N	20E	4400	Brown Top	21A28a	26	40N	12E	6000
Yakima River						Devils Park	20A4	34	38N	16E	5900
Ahtanum R. S.	21C11	24	12N	14E	3100	Freezeout Creek Trail	20A1	14	40N	14E	3500
Big Boulder Creek	21B9SP	35	23N	14E	3200	Freezeout Meadows (New)	20A38	8	40N	46E	5000
Bumping Lake	21C8P	23	16N	12E	3450	Granite Creek	20A06	25	36N	16E	3500
Bumping Lake New	21C36	13	16N	12E	3400	Meadows Cabins	20A8	29	36N	14E	1900
Bumping Ridge	21C38SP	9	15N	12E	4600	New Hozomeen Lake	21A30	19	40N	14E	2800
Fish Lake	21B45P	28	24N	14E	3371	Thunder Basin	20A07	10	35N	14E	4200
Green Lake	21C10SP	3	12N	13E	6000						
Grouse Camp	20B11SP	29	21N	19E	5385						
Lake Cle Elum	21B14M	15	20N	14E	2200						
Morse Lake	21C17SP	6	16N	11E	5400						
Tunnel Avenue	21B8P	13	21N	11E	2450						
White Pass (East Side)	21C28SP	2	13N	11E	4500						

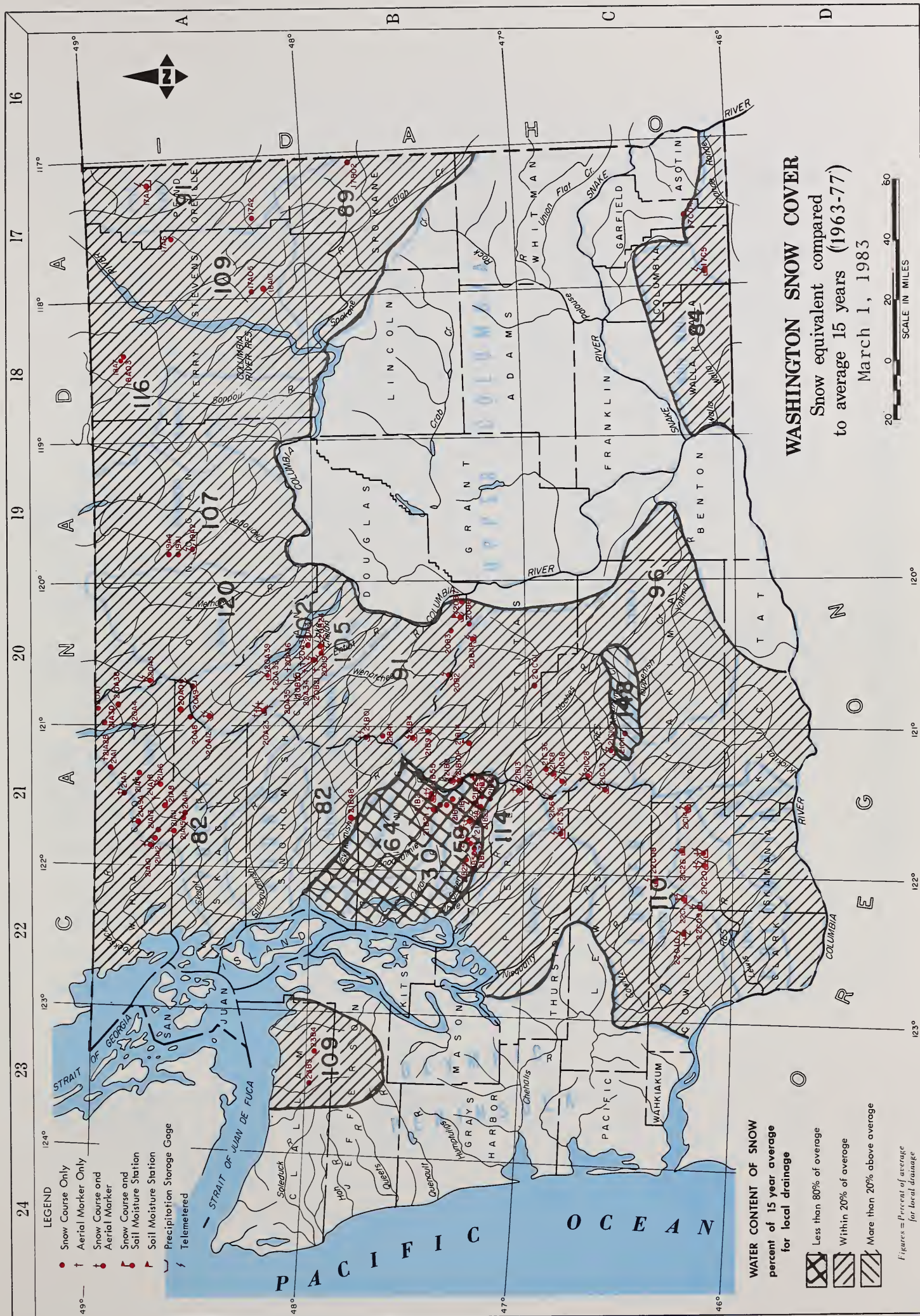
OLYMPIC PENINSULA

Dungeness River	23B4	1	28N	5W	5200
Deer Park					
Hurricane	23B3	36	29N	7W	4500

LEGEND

- 21A7 Snow Course Only
- 21A7a Aerial Marker Only
- 21A7A Snow Course And Aerial Marker
- 21A7M Snow Course And Soil Moisture Station
- 21A7m Soil Moisture Station
- 21A7P Snow Course And Precipitation Storage Gage
- 21A7P Precipitation Storage Gage
- 21A7SP Snow Pillow







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Multan Creek No. 1	19A1	30	37N	24E	5700	Pigtail Peak	21C33SP	11	13N	11E	5900
Multan Creek No. 2	19A4	19	37N	24E	6000	Patato Hill	21C14SP	36	10N	10E	4500
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Bumping Lake	21C8P	23	16N	12E	3450	New Hozomeen Lake	21A30	19	40N	14E	2800
Bumping Lake New	21C36	13	16N	12E	3400	Thunder Basin	20A07	10	35N	14E	4200
Bumping Ridge	21C38SP	9	15N	12E	4600	LEGEND					
Fish Lake	21B45P	28	24N	14E	3371	21A7	Snow Course Only				
Green Lake	21C10SP	3	12N	13E	6000	21A7a	Aerial Marker Only				
Grouse Camp	20B11SP	29	21N	19E	5385	21A7m	Snow Course And Aerial Marker				
Lake Cle Elum	21B14M	15	20N	14E	2200	21A7M	Snow Course And Soil Moisture Station				
Marse Lake	21C17SP	6	16N	11E	5400	21A7m	Soil Moisture Station				
Tunnel Avenue	21B8P	13	21N	11E	2450	21A7P	Snow Course And Precipitation Storage Gage				
White Pass (East Side)	21C28SP	2	13N	11E	4500	21A7P	Precipitation Storage Gage				
						21A7SP	Snow Pillow				

Baker River

Dock Butte	21A11A	8	36N	8E	3800
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A6A	17	38N	11E	5400
Marten Lake	21A9A	23	38N	8E	3600
Mount Blum	21A18a	27	38N	10E	5800
Rocky Creek	21A12AP	20	37N	8E	2100
Schreibers Meadow	21A10AP	18	37N	8E	3400
S. F. Thunder Creek	21A14A	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lakes	21A8P	25	37N	9E	4500

OLYMPIC PENINSULA

Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Elwha River					
Hurricane	23B3	36	29N	7W	4500

## WATER SUPPLY OUTLOOK

State of Washington

March 1, 1983

Water supplies are expected to be near average for most of Washington during this next spring and summer. The mountain snowpack is close to normal on almost all rivers and streams. Precipitation during February was generally heavier than normal except for Northwest Washington where it was near average. Reservoir storage is good with stored water at average to above average March 1 levels. Streamflow is expected to be good next summer.

### SNOW COVER

The snowpack is close to average on most Washington watersheds. The Snoqualmie, Green, and Cedar rivers have experienced considerable melt and runoff due to a high freezing level and rain. The snow cover is much below the March 1 average on all three streams. The best snowpack in the state is on Ahtanum Creek near Yakima where it is 148% of average. A snowcover near 120% of average exists on the Methow and Okanogan drainages. All other areas of the state are 80 to 120% of normal.

### PRECIPITATION

February was wetter than normal over the State of Washington except for the northwest side of the Cascades where it was near average. Percents of normal ranged from near 120% in Southwest Washington and on the east side of the Cascades to 185% in the north central part of the state. Warm temperatures caused much of this precipitation to fall as rain with subsequent above normal streamflow. Winter precipitation since November 1 has been near average to above average.



### RESERVOIR STORAGE

Reservoir storage is excellent for March 1. The Yakima reservoirs are currently holding 758,900 acre feet, 108% of average. Roosevelt Lake is 168%, and Lake Chelan is 99% of the normal level for this time of year. The storage in Ross Reservoir is 96% of average.

### STREAMFLOW

Streamflow during February was extremely good on most streams due to the above normal precipitation and warm temperatures. The flow was 206% on the Kettle, 145% on the Okanogan, 120% on the Yakima, 101% on the Cowlitz and 96% on the Skagit. Forecasts of spring and summer streamflow are 80 to 120% of average on most rivers. Exceptions are the Kettle at 124%, Colville at 131%, and the Cedar and Green rivers which will flow near 75% of normal.

# STREAMFLOW FORECASTS - MARCH, 1983

The following summarized runoff forecasts are based principally on mountain snowcover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify the streamflow. The forecasts are a cooperative effort of the Soil Conservation Service and the National Weather Service. Streamflow figures for 1982 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1983	Seasonal Streamflow in Thousands of Acre-Feet				
		% 15-Yr. Avg.	Fore- cast period	1982	1981	1980 15-Yr. Average 63-77
<u>COLUMBIA BASIN</u>						
<u>COLUMBIA RIVER SYSTEM</u>						
Columbia River	44900	99	Apr-Sept	48531	40810	45510
at Birchbank <u>1/</u>	35900	99	Apr-July	38501	34081	36358
	25900	99	Apr-June	27002	27618	26197
Columbia River	66800	98	Apr-Sept	70303	61016	68026
at Grand Coulee <u>1/</u>	55900	98	Apr-July	58525	52320	57050
	43400	98	Apr-June	44235	43871	44280
Columbia River	74700	101	Apr-Sept	77308	66512	73911
bl. Rock Island Dam <u>1/</u>	63000	101	Apr-July	64689	57767	62444
	49000	101	Apr-June	49348	48667	48479
Columbia River	105900	101	Apr-Sept	96188	91737	103477
at The Dalles, OR <u>1/</u>	88900	100	Apr-July	81125	79919	88503
	71200	100	Apr-June	63521	68304	71219
<u>PEND OREILLE RIVER SYSTEM</u>						
Pend Oreille River	13300	85	Apr-Sept	13896	13271	15643
bl. Box Canyon	12200	85	Apr-July	13179	12116	14334
	10435	85	Apr-June	11594	10776	12277
<u>KETTLE RIVER SYSTEM</u>						
Kettle River	2296	124	Apr-Sept	2184	1835	1845
nr. Laurier	2214	126	Apr-July	2013	1747	1753
	2015	127	Apr-June	1657	1603	1587
Colville River	176	131	Apr-Sept	125	116	134
at Kettle Falls	162	132	Apr-July	111	105	123
	152	132	Apr-June	94	97	115

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Basin, Stream and Station	Forecast Runoff 1983	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr. Avg.	Fore cast period	1982	1981	1980	15-yr. Average 63-77
<u>SPOKANE RIVER SYSTEM</u> **							
Spokane River	2780	96	Apr-Sept		2238	2214	2910
at Post Falls, ID <u>2/</u>	2672	95	Apr-July		2145	2046	2733
	2470	95	Apr-June		1960	1904	2600
<u>OKANOGAN RIVER SYSTEM</u>							
Similkameen River	1520	100	Apr-Sept		1241	1479	1517
nr. Nighthawk	1420	100	Apr-July		1118	1391	1417
	1192	100	Apr-June		930	1247	1192
Okanogan River	1710	99	Apr-Sept		1631	1551	1718
nr. Tonasket	1560	100	Apr-July		1416	1423	1564
	1304	100	Apr-June		1107	1240	1304
<u>METHOW RIVER SYSTEM</u>							
Methow River	1240	123	Apr-Sept		786	996	1011
nr. Pateros	1150	123	Apr-July		724	934	937
	972	123	Apr-June		602	811	791
<u>CHELAN RIVER SYSTEM</u>							
Chelan River	1435	116	Apr-Sept		916	1120	1238
at Chelan <u>3/</u>	1274	118	Apr-July		798	1020	1080
	992	119	Apr-June		621	859	834
Stehekin River	983	111	Apr-Sept		662		883
at Stehekin	863	116	Apr-July		543		744
	652	117	Apr-June		403		557
Entiat River	278	115	Apr-Sept		186	216	241
nr. Ardenvoir	255	117	Apr-July		168	200	218
	204	117	Apr-June		137	172	174
<u>WENATCHEE RIVER SYSTEM</u>							
Wenatchee River	1409	109	Apr-Sept				1297
at Plain	1277	110	Apr-July				1156
	993	110	Apr-June				903
Wenatchee River	1957	111	Apr-Sept		1188	1516	1767
at Peshastin	1771	112	Apr-July		1075	1399	1586
	1429	114	Apr-June		869	1208	1250
Stemilt Basin	138*	100	May-Sept				138*
nr. Wenatchee							
Icicle Creek	380	102	Apr-Sept				371
nr. Leavenworth	362	106	Apr-July				342
	304	109	Apr-June				279

\* Thousands of Miners' Inches.

\*\* Forecasts made by Jerry Beard, Soil Conservation Service, Boise, Idaho.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

3/ Observed flow corrected for storage in Lake Chelan.



Basin, Stream and Station	Forecast Runoff 1983	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr. Avg.	Fore cast period	1982	1981	1980	15-yr. Average 63-77
<u>YAKIMA RIVER SYSTEM</u>							
Yakima River	144	100	Apr-Sept		95	115	144
nr. Martin <u>4/</u>	134	101	Apr-July		82	103	133
	115	101	Apr-June		73	95	114
Yakima River	975	100	Apr-Sept		700	792	975
at Cle Elum <u>5/</u>	882	100	Apr-July		643	716	882
	750	100	Apr-June		563	646	750
Yakima River	2211	102	Apr-Sept		1194	1833	2168
nr. Parker <u>6/</u>	1993	102	Apr-July		1059	1733	1954
	1726	102	Apr-June		961	1610	1693
Kachess River	126	100	Apr-Sept		81	111	126
nr. Easton <u>7/</u>	121	102	Apr-July		72	105	119
	107	104	Apr-June		66	91	103
Cle Elum River	479	100	Apr-Sept		313	-	479
nr. Roslyn <u>8/</u>	435	100	Apr-July		282	350	435
	369	103	Apr-June		244	314	358
Bumping River	160	110	Apr-Sept		78	129	146
nr. Nile <u>9/</u>	150	114	Apr-July		70	120	132
	121	114	Apr-June		63	111	106
American River	144	113	Apr-Sept	140	63	121	127
nr. Nile	133	115	Apr-July	130	58	105	116
	112	118	Apr-June	109	51	114	95
Tieton River	284	113	Apr-Sept		148	224	252
at Tieton Dam <u>10/</u>	246	116	Apr-July		131	192	212
	195	116	Apr-June		108	166	168
Naches River	952	107	Apr-Sept		419	729	893
nr. Naches <u>11/</u>	887	110	Apr-July		380	694	806
	759	112	Apr-June		339	638	678
Ahtanum Creek	60	128	Apr-Sept				47
nr. Tampico <u>12/</u>	54	128	Apr-July				42
	47	128	Apr-June				37

4/ Observed flow corrected for storage in Lake Keechelus.

5/ Observed flow corrected for storage in Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.

6/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation, and Sunnyside Canals.

7/ Observed flow corrected for storage in Lake Kachess.

8/ Observed flow corrected for storage in Lake Cle Elum.

9/ Observed flow corrected for storage in Bumping Lake.

10/ Observed flow corrected for storage in Rimrock Lake.

11/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals, and City of Yakima.

12/ Observed flow of North and South Forks (Combined).

Basin, Stream and Station	Forecast Runoff 1983	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-yr.	Fore cast	1982	1981	1980	15-yr. Average 63-77
<u>LOWER COLUMBIA RIVER SYSTEM</u>							
Mill Creek	17.50	100	Apr-Sept	24.62		11.65	17.50
at Walla Walla	17.33	100	Apr-July	24.48		11.64	17.33
	17.15	100	Apr-June	21.63		11.64	17.15
Lewis River	1348	104	Apr-Sept		1096	1001	1298
at Ariel <u>13/</u>	1185	105	Apr-July		971	883	1128
	1046	105	Apr-June		865	798	992
Cowlitz River	2100	99	Apr-Sept			1626	2126
bl. Mayfield Dam	1830	99	Apr-July			1432	1854
	1537	99	Apr-June			1275	1553
Cowlitz River	2830	102	Apr-Sept		2390	1976	2766
at Castle Rock	2460	102	Apr-July		2125	1852	2401
	2070	102	Apr-June		1875	1649	2029
<u>OLYMPIC PENINSULA</u>							
<u>DUNGENESS RIVER SYSTEM</u>							
Dungeness River	173	108	Apr-Sept				160
nr. Sequim	146	112	Apr-July				130
	108	112	Apr-June				96
<u>ELWHA RIVER SYSTEM</u>							
Elwha River	557	101	Apr-Sept				553
nr. Port Angeles	458	101	Apr-July				454
<u>PUGET SOUND</u>							
<u>SKAGIT RIVER SYSTEM</u>							
Skagit River	2100	95	Feb-Aug				2532
at Newhalem <u>15/</u>	2206	94	Apr-Sept				2356
	1850	94	Apr-July				1972
	1443	97	Apr-June				1485
<u>GREEN RIVER SYSTEM</u>							
Green River	238	75	Apr-Sept				316
bl. Howard Hanson Dam <u>16/</u>	216	76	Apr-July				284
	196	77	Apr-June				256
<u>CEDAR RIVER SYSTEM</u>							
Cedar River	70	75	Apr-Sept				93
nr. Cedar Falls	66	78	Apr-July				84
	57	78	Apr-June				73

13/ Observed flow corrected for storage in Lake Merwin, Yale, and Swift Reservoirs.

14/ Observed flow corrected for storage in Mayfield Reservoir.

15/ Observed flow corrected for storage in Diablo, Ross, and Gorge Reservoirs.

16/ Observed flow corrected for storage in Howard Hanson Dam.

# COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about March 1, 1983, as percent of the same date in 1982 and 1981 and average of record.

Tributary Basin	No. of Courses Average	1983 Snow Water Expressed as percent of		
		1982	1981	1963-77 Avg.

## UPPER COLUMBIA BASIN

Pend Oreille	14	87	241	91
Kettle	10	116	183	116
Colville	1	112	-	109
Spokane	12	92	242	89
Okanogan	33	102	174	107
Methow	4	116	141	120
Chelan	5	81	157	102
Entiat	9	95	157	100
Wenatchee	9	80	238	91
Yakima	14	100	329	106
Ahtanum	2	142	288	148

## LOWER COLUMBIA

Mill Creek	1	68	189	84
Cowlitz	2	94	357	110

## PUGET SOUND

White	1	93	284	114
Cedar	1	28	-	30
Green	6	53	406	59
Snoqualmie	2	60	530	64
Skykomish	2	76	260	82
Skagit	16	80	270	82

## OLYMPIC PENINSULA

Morse	1	96	467	110
Elwha	1	95	1016	95
Dungeness	1	96	470	121



# RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE 1/ CAPACITY	1983	Measured March 1 1982	1982	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	222.2	433.7	117.5	121.6
Columbia	Franklin D. Roosevelt Lake	5232.0	4470.7	4049.4	4813.9	2681.2
Columbia	Banks Lake	714.9	712.2	706.9	538.0	621.3
Okanogan	Conconully Reservoir	13.0	12.4	10.2	7.8	6.7
Okanogan	Conconully Lake	10.5	10.4	8.9	10.4	7.5
Chelan	Lake Chelan	676.1	233.3	269.4	437.3	235.5
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	100.3	121.8	143.4	105.4
Kachess	Kachess Lake	239.0	207.2	182.1	204.1	183.0
Cle Elum	Lake Cle Elum	436.9	309.6	118.7	267.3	280.2
Bumping	Bumping Lake	33.7	6.8	16.5	32.5	8.7
Tieton	Rimrock Lake	198.0	135.0	153.6	197.5	125.3
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1404.1	856.2	799.4	1287.6	894.0
Skagit	Diablo Reservoir	90.6	89.0	84.3	85.2	85.2
Skagit	Gorge Reservoir	9.8	8.4	7.6	8.0	8.1

1/ Based on Active Storage

\* 15-yr. Average 1963-1977

# PRECIPITATION 1/

## Division Average Observations and Departures

Drainage Divisions	FALL		WINTER	
	Sept-Oct Observed	1982 <u>2/</u> Departure	Nov. 1982 - Observed	Feb. 1983 <u>2/</u> Departure
Columbia in Canada	5.40	+0.38	11.24	-2.32
Pend Oreille - Spokane	4.85	+0.81	15.48	+0.46
Northeastern Washington	2.73	+0.25	11.07	+2.96
Southeastern Washington	4.19	+1.68	9.04	+0.27
East Slope Cascades	6.27	+1.52	27.39	+3.19
North Central Washington	2.35	+0.76	7.42	+ 1.64
Northwest Slope Cascades	12.32	-0.89	43.66	-3.44
Southwest Slope Cascades	10.16	+1.48	37.15	+1.67
Northeastern Washington		- Lower Spokane, Colville, Sanpoil, and Lower Kettle Drainages.		
Southeastern Washington		- Touchet, Tucannon, and Palouse Drainages.		
East Slope Cascades		- Yakima, Wenatchee and Chelan Drainages.		
North Central Washington		- Methow and Okanogan Drainages.		
Northwest Slope Cascades		- Puget Sound Drainages.		
Southwest Slope Cascades		- Lower Columbia Drainages.		

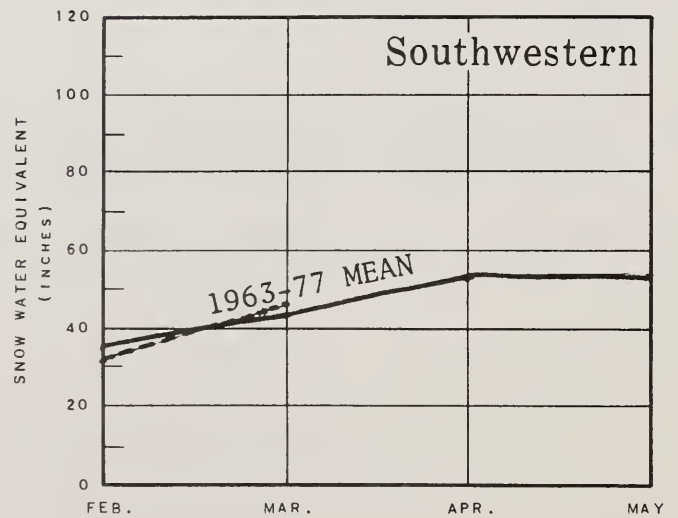
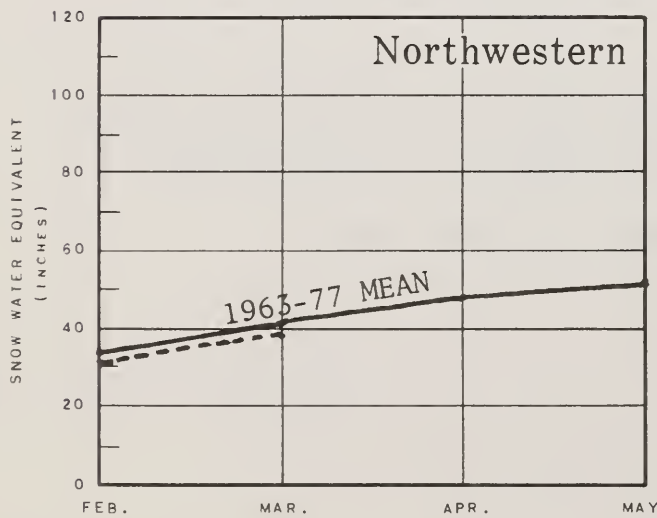
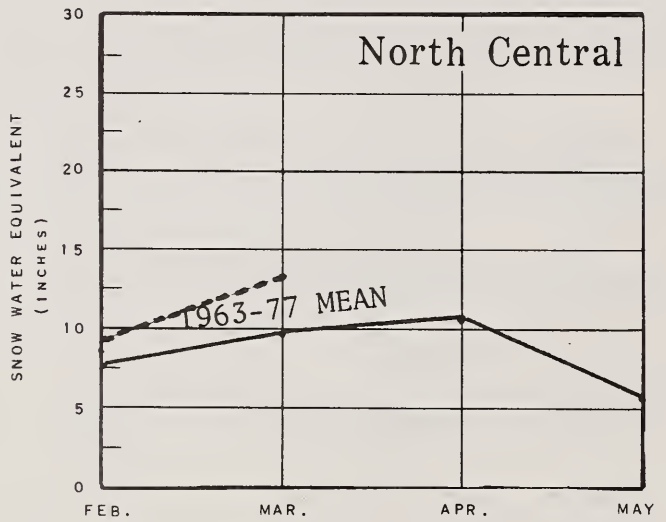
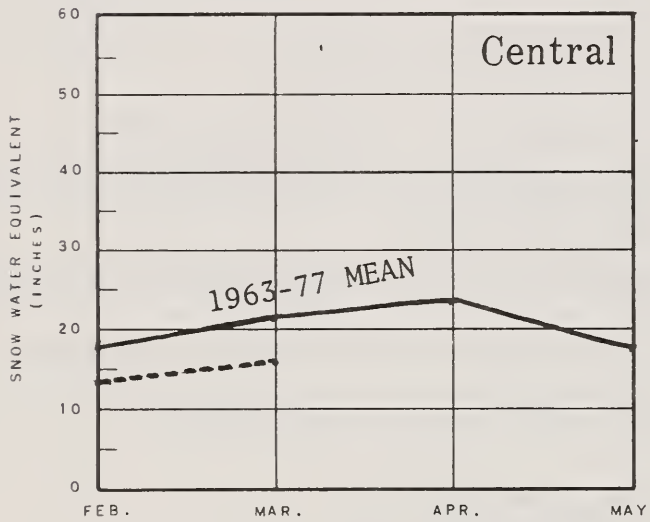
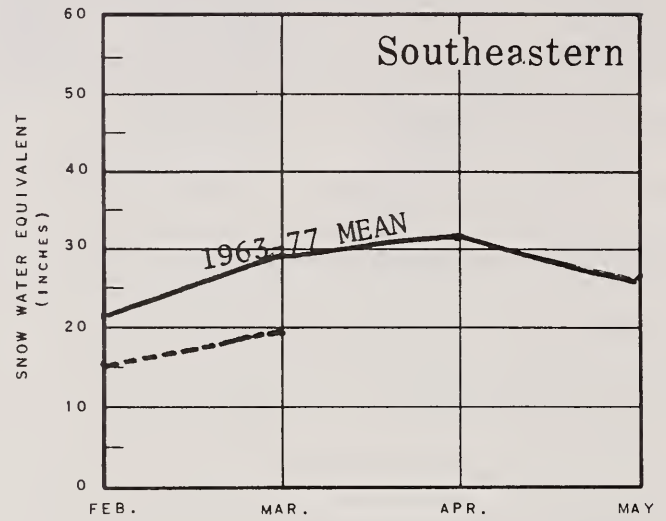
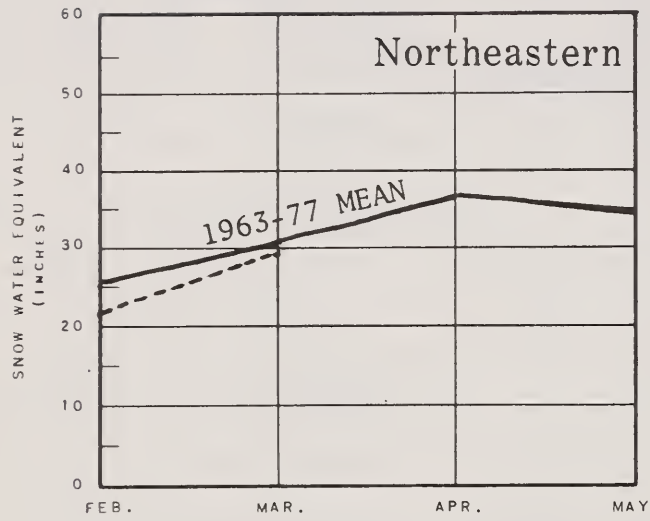
1/ - Preliminary analysis by National Weather Service from data furnished by Meteorological Services of Canada and the National Weather Service.

2/ - Departure from 15-year (1958-72) drainage division average.

# WASHINGTON SNOW COVER

1983

## DRAINAGE AREAS



Average 1983

Selected Snow Survey Courses by Soil Conservation Service

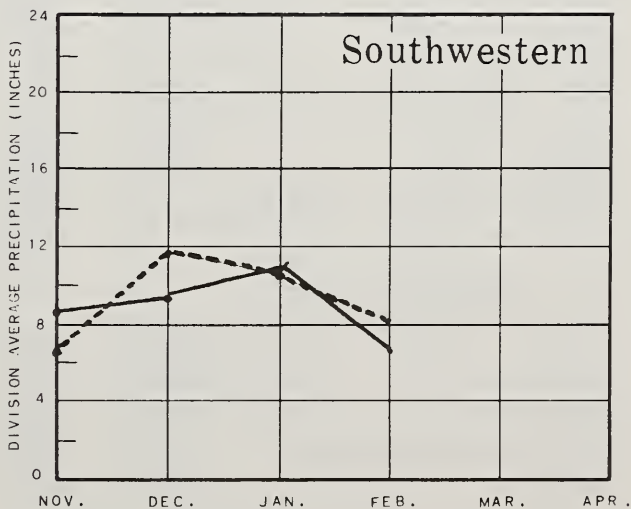
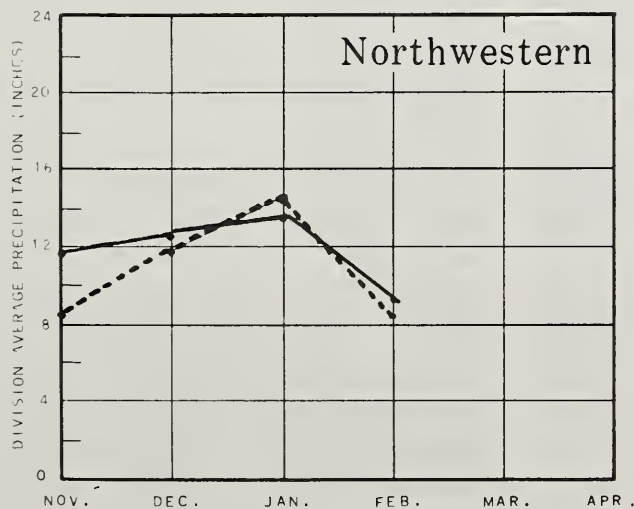
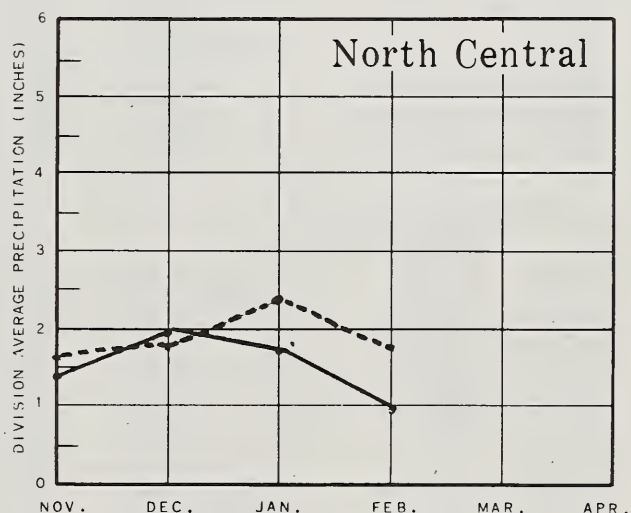
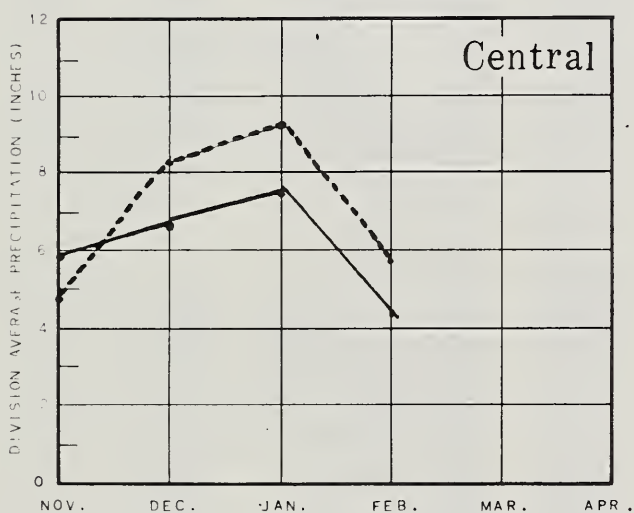
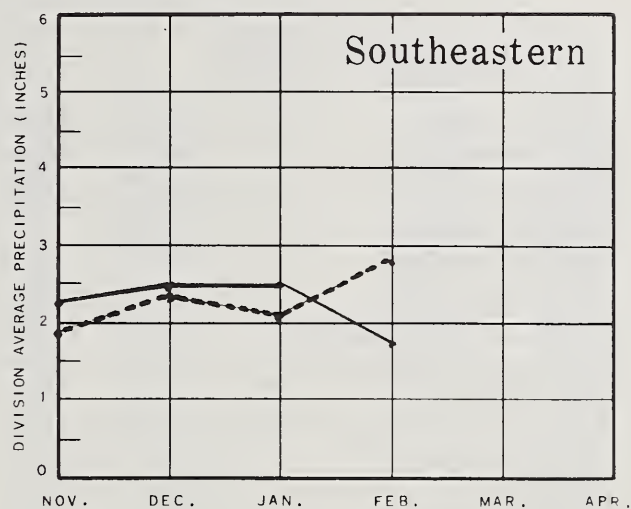
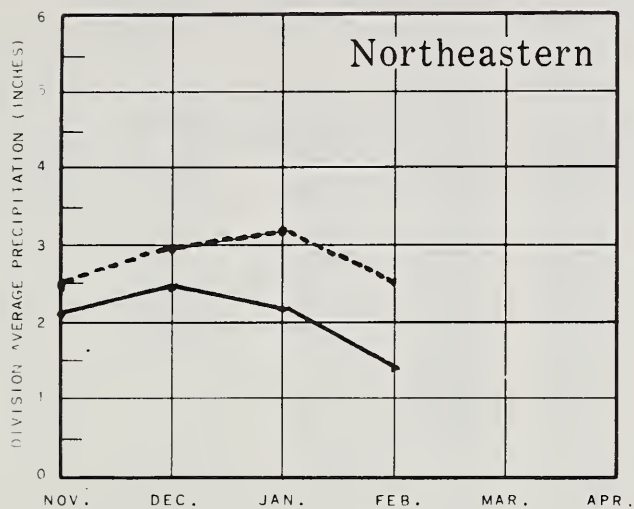
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# WASHINGTON VALLEY PRECIPITATION

1983

## DRAINAGE AREAS



Average  
1983

Preliminary Analysis by National Weather Service

SNOW DATA TO MARCH 1, 1983 - APPENDIX 1

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

U P P E R C O L U M B I A D R A I N A G E

PEND OREILLE RIVER

Baree Creek	15B11	5500	2/24	97	38.9	45.4	43.8
Baree Midway	15B16	4600	2/24	83	30.6	34.1	34.0
Baree Trail	15B15	3800	2/24	14	4.8	8.6	10.0
Benton Meadow	16A02	2344	2/25	10	2.5	7.4	6.4
Benton Spring	16A03	4900	2/25	53	19.3	15.8	17.7
Boyer Mountain	17A02	5250	2/24	73	26.6	20.2	23.1
Brush Creek Timber	14A13	5000	2/28	28	7.5	10.0	9.5
Bunchgrass Meadow	17A01	5000	2/25	89	32.3	-	-
Chewelah	17A04	4923		Discontinued		13.1	14.3
Heart Lake Trail	14C10	4800	2/26	43	15.4	20.8	21.1
Hoodoo Basin	15C10	6000	2/26	111	40.4	49.9	45.4
Hoodoo Creek	15C01	5900	2/26	105	36.6	47.5	42.0
Lookout	15B02	5250	2/28	80	29.0	30.6	31.0
Mosquito Ridge	16A04A	5100	2/27	115	40.4	38.3	34.6
Nelson	2D04-Can	3050	2/25	48	16.1	16.1	14.3*
Schweitzer Bowl	16A06	4500	3/1	90	34.5	31.2	28.1
Schweitzer Ridge	16A05	6100	3/1	123	49.0	44.6	40.3
Winchester Creek	17A03	2970		Discontinued		9.3	10.6

KETTLE RIVER

Barnes Creek	2B06-Can	5300	2/24	50	15.7	19.1	17.3*
Big White Mtn.	2E03-Can	5500	2/27	65	20.4	18.1	17.0*
Boulder Road	18A02	1450		Discontinued		4.0	4.5
Butte Creek	18A03	4070	2/26	38	11.3	7.5	8.5
Cabin Creek	18A08	3170		Discontinued		7.1	7.2
Carmi	2E02-Can	4100	2/27	29	7.7	5.6	6.1*
Farron # 1	2B02-Can	4000	2/28	56	15.6	12.5	12.1*
Farron # 2	2B02A-Can	4000	2/28	55	15.2	12.8	11.4*
Goat Creek	18A04	3595		Discontinued		6.4	6.4
Graystoke Lake	2F04-Can	5950	3/1	45	13.9	12.0	14.1*
Monashee Pass	2E01-Can	4500	2/24	36	11.7	13.6	12.4*
Snow Caps Creek	18A05	2150		Discontinued		4.4	4.8
Snow Caps Trail	18A06	2720		Discontinued		5.9	5.8
Summit G.S.	18A07	4600	2/26	27	8.1	6.4	7.3
Trapping Creek Lower	2E05-Can	3050	2/26	21	5.7	5.0	5.1*
Trapping Creek Upper	2E04-Can	4450	2/26	39	10.4	10.2	9.1*

COLVILLE RIVER

Baird	17A06	3215	2/26	24	7.3	6.5	6.7
Carlson	18A09	2885		Discontinued		0.0	4.2
Chewelah	17A04	4925		Discontinued		13.1	14.3
Stranger Mountain	17A05	4990		Discontinued		10.4	12.5
Togo	18A10	3370		Discontinued		9.2	10.3

# Average based on 1963-77 average

\* Average for years of record

## SNOW DATA TO MARCH 1, 1983 - APPENDIX 2

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #
SPOKANE RIVER							
Above Burke	15B08	6100	2/28	40	15.4	18.1	22.9
Copper Ridge	16B02	4800	2/25	61	25.6	25.2	25.1
Forty-nine Meadows	15B03	5000	3/1	71	22.0	23.8	27.2
Fourth of July Summit	16B03	3100	2/28	17	5.4	6.4	8.9
Kellogg Peak	16B05A	5560	2/27	66	25.7	27.3	28.2
Lookout	15B02	5250	2/28	80	29.0	30.6	31.0
Lost Lake	15B14A	6000	3/1	132	41.4	49.7	50.0
Lower Sands Creek	16B01	3400	2/28	44	17.0	15.2	17.5
Mosquito Ridge	16A04A	5110	2/27	115	40.4	38.3	34.6
Roland Summit	15B05A	5200	2/27	71	31.5	30.0	31.3
Sherwin	16C01	3200	2/23	27	8.4	14.2	13.3
Sunset	15B09A	5600	2/27	101	35.5	39.1	32.6
NEWMAN LAKE							
Ragged Ridge	17B02	3333	2/27	10	2.8	2.6	New
OKANOGAN RIVER							
Aberdeen Lake	1F01A-Can	4300	2/28	30	7.6	7.4	6.0*
Blackwall Mountain	2G03-Can	6250	2/28	79	28.0	32.0	30.7*
Bouleau Lake	2F21-Can	4580	2/26	52	14.0	14.6	12.0*
Brenda Mine	2F18-Can	4800	2/25	38	13.0	11.1	12.2*
Brookmere	1C01-Can	3200	2/28	24	6.7	9.2	8.8*
Enderby	1F04-Can	6250	2/28	109	37.1	45.7	31.8*
Esperon Creek Lower	2F15-Can	4400	2/27	46	13.5	11.5	10.4*
Esperon Creek Middle	2F14-Can	4700	2/27	51	15.3	13.9	13.0*
Esperon Creek Upper	2F13-Can	5400	2/27	55	18.1	16.1	15.6*
Grayback Reservoir	2F08-Can	5225	2/25	33	8.9	5.8	7.8*
Graystoke Lake	2F04-Can	5950	3/1	45	13.9	12.0	14.1*
Hamilton Hill	2G06-Can	4900	2/25	35	10.6	12.2	14.1*
Harts Pass	20A05A	6500	2/25	116	39.3	40.7	41.1
Horseshoe Basin	19A05a	7000		Discontinued		16.8	16.3
Isintok Lake	2F11-Can	5510	2/26	24	5.5	7.1	7.4*
Lightning Lake	3D02-Can	4000	2/24	33	10.2	13.4	9.9*
Lost Horse Mountain	2G04-Can	6300	2/28	33	8.0	7.3	8.3*
Loup Loup	19A07	4650		Discontinued		9.8	8.8
McCulloch	2F03-Can	4200	2/28	24	6.8	7.0	6.3*
Missezula Mountain	2G05-Can	5100	2/23	29	7.9	8.7	8.8*
Mission Creek	2F05-Can	6000	3/1	60	18.8	18.9	17.0*
Monashee Pass	2E01-Can	4500	2/24	36	11.7	13.6	12.4*
Mount Kobau	2F12-Can	5950	2/27	50	13.5	12.1	10.6*
Muckamuck	19A09a	6390		Discontinued		18.6	14.7
Mutton Creek No. 1	19A01	5700	2/22	52	16.1	15.2	12.7
Mutton Creek No. 2SP	19A11	6000		Not Measured		7.8	10.0
Nickel Plate Mtn.	2G02-Can	6200	2/27	22	6.5	7.1	7.2*
Oyama Lake	2F19-Can	4400	2/27	30	8.0	6.3	6.3*

# Average based on 1963-77 average

\* Average for years of record



## SNOW DATA TO MARCH 1, 1983 - APPENDIX 3

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

OKANOGAN RIVER (Cont.)

Paysayten	20A28a	4300		Discontinued		16.5	16.9
Postill Lake	2F07-Can	4500	2/28	34	8.3	8.0	7.4*
Rusty Creek	19A03	4000	2/23	28	7.4	6.1	6.6
Salmon Meadows	19A02	4500	2/22	45	13.2	9.6	9.1
Silver Star Mountain	2F10-Can	6050	2/27	87	29.1	28.7	23.8*
Starvation Mountain	19A10a	6750		Discontinued		16.8	17.5
Summerland Reservoir	2F02-Can	4200	2/27	31	9.1	9.4	8.8*
Sunday Summit	2G01A-Can	4300	2/24	14	3.1	5.9	5.6*
Touts Coulee	19A06	2845		Discontinued		3.6	3.5
Trout Creek	2F01-Can	4700	2/26	22	6.5	6.8	6.5*
Vaseux Creek	2F20-Can	4600	2/28	30	7.5	6.0	6.0*
White Rocks Mountain	2F09-Can	6000	2/25	69	23.3	21.5	19.3*

METHOW RIVER

Billy Goat Pass	20A10a	6409		Discontinued			31.3
Dollar Watch	20A29a	7000		Discontinued			27.0
Harts Pass	20A05A	6500	2/26	116	39.3	40.7	41.1
Horseshoe Basin	19A05a	7000		Discontinued		16.8	16.3
Loup Loup	19A07	4650		Discontinued		9.8	8.8
Mutton Creek No. 1	19A01	5700	2/22	52	16.1	15.2	12.7
Mutton Creek No. 2SP	19A11	6000		Not Measured		7.8	10.0
Rusty Creek	19A03	4000	2/23	28	7.4	6.1	6.6
Salmon Meadows	19A02	4500	2/22	45	13.2	9.6	9.1
War Creek Pass	20A31a	6500		Discontinued		39.6	42.9

CHELAN LAKE BASIN

Cloudy Pass +	20A22a	6500		Not Measured		-	35.0
Greenwood Flat	20A25a	3540		Discontinued			20.8
Little Meadows +	20A24a	5275	3/4	94	37.6	53.4	37.6
Lyman Lake	20A23A	5900	3/4	145	59.0	63.7	49.8
Mirror Lake	20A39	5600	3/4	91	33.0	38.7	New
Park Creek Flat	20A13a	2220		Discontinued			31.5
Park Creek Ridge	20A12A	4600	3/4	112	45.5	59.7	44.2
Petersons	20A16a	3730		Discontinued			34.2
Rainy Pass	20A09	4780	2/27	95	33.0	39.6	37.0
Safety Harbor	20A30A	6300		Discontinued			26.6
War Creek Pass	20A31a	6500		Discontinued		39.6	42.9

ENTIAT RIVER

Blue Creek G.S.	20B28a	5425		Discontinued		43.6	33.8
Brief	20B19	1600	2/28	22	7.0	9.0	7.5
Entiat Meadows +	20A33a	4540	3/5	126	44.7	45.5	57.7
Entiat River Trail +	20A34a	3325	3/5	68	23.1	24.9	25.6
Four Mile Ridge +	20B27a	6800		Discontinued		31.7	28.4
Fox Camp +	20A36a	6510	3/5	176	62.5	-	52.9

+ Snow water equivalent estimated from aerial stadia observation

# Average based on 1963-77 average

\* Average for years of record

# SNOW DATA TO MARCH 1, 1983 - APPENDIX 4

## SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

### ENTIAT RIVER (Cont.)

Pope Ridge	20B20	3540	2/28	57	19.3	20.6	18.2
Pugh Ridge +	20A32a	6725	3/5	107	38.0	36.0	40.8
Shady Pass	20A37	6200	2/28	80	28.2	30.4	23.7
Snow Brushy +	20A35a	3910	3/5	111	37.7	41.5	35.8
Tommy Creek +	20B21a	4900	2/27	76	27.0	25.1	26.5

### WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	2/28	60	23.7	31.0	26.0
Berne-Mill Creek New	21B41	3240	2/28	55	22.1	27.8	24.0
Blewett Pass No. 2	20B02	4270	3/2	52	15.5	16.4	15.0
Chiwaukum G.S.	20B16	1810	2/28	32	11.5	12.6	11.6
Fish Lake	21B04	3371		SNOTEL SITE		40.4	31.1
Lake Wenatchee	20B05	1970	2/28	32	11.3	16.5	14.4
Lyman Lake	20A23A	5900	3/4	145	59.0	63.7	49.8
Merritt	20B18	2140	2/28	31	12.0	18.2	15.8
Stevens Pass	21B01	4070	2/28	100	38.8	49.0	48.0
Stevens Pass Sand Shed	21B45	3700	2/28	72	28.6	38.4	34.9

### SQUILCHUCK CREEK

Beehive Springs	20B03	4400	2/24	29	9.5	6.3	8.1
Scout-A-Vista	20B04	3400	2/24	31	9.3	8.2	8.2

### STEMILT CREEK

Jump-Off	20B08	4450		Discontinued		9.2	8.4
Stemilt Slide	20B06	5000	2/24	51	16.0	13.3	13.1
Upper Wheeler	20B07	4400		SNOTEL SITE		8.6	9.7

### COLOCKUM CREEK

Colockum Creek Upper	20B22	5300		Discontinued		11.7	13.3
Colockum Creek Lower	20B23	4300		Discontinued		8.5	10.1
Trough # 2	20B25	5310	3/1	54	17.0	14.0	New

### YAKIMA RIVER

Ahtanum R.S.	21C11	3100	2/24	33	10.5	6.9	6.7
Big Boulder Creek	21B09	3200	3/1	47	17.8	25.1	19.3
Blewett Pass No. 2	20B02	4270	3/2	52	15.5	16.4	15.0
Bumping Lake	21C08	3450	2/11	58	15.4	8.8	14.8
			2/25	49	17.9	12.5	20.4
Bumping Lake New	21C36	3400	2/11	66	18.9	16.5	18.5
			2/25	59	19.5	17.8	20.2
Cayuse Pass	21C06	5300	3/3	-	81.0	86.9	71.0
Colockum Pass	20B09	5370	3/4	59	22.0	15.9	14.2

+ Snow water equivalent estimated from aerial stadia observation

# Average based on 1963-77 average

## SNOW DATA TO MARCH 1, 1983 - APPENDIX 5

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #
YAKIMA RIVER (Cont.)							
Cooke Creek	20B10	4123			Discontinued	4.5	5.7
Corral Pass	21B13	6000			SNOTEL SITE	-	35.1
Fish Lake	21B04	3371			SNOTEL SITE	40.4	31.1
Green Lake	21C10	6000	2/24	102	41.3	31.3	29.6
Grouse Camp	20B11	5385	3/4	65	26.0	18.9	15.5
High Creek	20B12	2930			Discontinued	6.1	6.1
Joe Lake	21B46a	4624			Discontinued	76.1	53.5
Lake Cle Elum	21B14	2200	2/14	17	6.6	11.6	10.5
			2/23	15	5.6	12.7	9.2
Lemah Creek	21B47a	3327			Discontinued	51.6	41.9
Manashtash	20C01	3935			Discontinued	4.3	4.3
Morse Lake	21C17	5400			SNOTEL SITE	57.7	47.2
Nanum	20B13	3875			Discontinued	5.6	9.8
Olallie Meadows	21B02	3625	2/28	58	24.1	44.1	44.8
Satus Pass	20D01	4030			Discontinued	7.4	9.1
Stampede Pass	21B10	3860	2/14	84	33.2	48.1	36.2
			2/28	82	34.8	51.4	35.7
Trail Creek	20B14	3360			Discontinued	0.0	2.6
Tunnel Avenue	21B08	2450	2/15	44	15.4	20.5	21.4
			2/28	39	15.4	24.9	21.6
Van Epps Pass	20B26a	5925			Discontinued	-	43.0
Walters Flat	20B15	3360			Discontinued	6.6	7.1
Waptus Lake	21B49a	3024			Discontinued	50.3	41.4
White Pass (E. Side)	21C28	4500	2/10	67	20.4	24.2	21.0
						25.7	23.1

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	2/24	33	10.5	6.9	6.7
Green Lake	21C10	6000	2/24	102	41.3	31.3	29.6

LOWER COLUMBIA DRAINAGEASOTIN CREEK

Spruce Springs	17C04	5700		Discontinued		22.9	22.6
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MILL CREEK

Homestead	17C01	4030		Discontinued		10.6	8.2
Martin Springs	17C02	4400		Discontinued		15.2	12.1
High Ridge	18D19	4150	2/28	72	24.7	36.1	29.4

KLICKITAT RIVER

Satus Pass	20D01	4030		Discontinued		7.4	9.1
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# Average based on 1963-77 average



## SNOW DATA TO MARCH 1, 1983 - APPENDIX 6

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average <sup>#</sup>

COWLITZ RIVER

Cayuse Pass	21C06	5300	3/3	-	81.0	86.9	71.0
White Pass (E. Side)	21C28	4500	2/10	67	20.4	24.2	21.0
						25.7	23.1

PUGET SOUND DRAINAGE
WHITE RIVER

Cayuse Pass	21C06	5300	3/3	-	81.0	86.9	71.0
Corral Pass	21B13	6000			SNOTEL SITE	-	35.1
Morse Lake	21C17	5400			SNOTEL SITE	57.7	47.2

GREEN RIVER

Airstrip	21B24	1800	2/28	0	0.0	2.0	5.1
Charley Creek	21B25	1200	2/28	0	0.0	0.0	1.2
Cougar Mountain	21B42	3200			SNOTEL SITE	22.8	20.9
Grass Mtn. No. 2	21B27	2900	2/28	10	3.0	11.2	19.1
Grass Mtn. No. 3	21B28	2100	2/28	0	0.0	3.2	5.7
Lester Creek	21B29	3100	2/28	37	12.6	19.6	21.7
Lynn Lake	21B50	4000	2/28	18	5.8	22.7	18.7
Sawmill Ridge	21B31	4700	2/28	63	23.0	32.8	33.7
Snowshoe Butte	21B43	5000			Discontinued	54.8	52.7
Stampede Pass	21B10	3860	2/15	84	33.2	48.1	36.2
			2/28	82	34.8	51.4	35.7
Twin Camp	21B30	4100	2/28	50	18.2	28.8	22.3

CEDAR RIVER

City Cabin	21B03	2390	2/24	0	0.0	14.1	17.2
Mt. Gardner	21B21	3300	2/24	12	5.7	20.1	18.7

SNOQUALMIE RIVER

Alpine Meadow	21B48	3500	2/25	67	30.8	48.3	41.2
Olallie Meadows	21B02	3625	2/28	58	24.1	44.1	44.8

SKYKOMISH RIVER

Stevens Pass	21B01	4070	2/28	100	38.8	49.0	48.0
Stevens Pass Sand Shed	21B45	3700	2/28	72	28.6	38.4	34.9

SKAGIT RIVER

Beaver Creek Trail	21A04	2200	2/26	31	10.9	16.7	14.9
Beaver Pass	21A01	3680	2/26	76	28.9	33.4	28.7
Brown Top Ridge +	21A28a	6000	2/26	140	50.6	58.2	61.2
Cloudy Pass +	20A22a	6500			Not Measured	-	35.0
Devils Park	20A04	5900	2/26	107	36.8	41.8	41.3

# Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

## SNOW DATA TO MARCH 1, 1983 - APPENDIX 7

## SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

SKAGIT RIVER (Cont.)

Freezeout Creek Trail	20A01	3500	2/27	32	12.0	14.2	12.7
Freezeout Meadows New	20A38	5000	2/27	88	35.7	28.4	42.5
Granite Creek	21A29A	3500	2/27	49	17.0	18.8	19.2
Harts Pass	20A05A	6500	2/26	116	39.3	40.7	41.1
Klesilkwa	3D03A-Can	3700	2/25	23	8.1	-	12.0*
Lightning Lake	3D02-Can	4000	2/24	33	10.2	13.4	9.9*
Lyman Lake	20A23A	5900	3/4	145	59.0	63.7	49.8
Meadow Cabins	20A08	1900	2/26	2.9	1.2	8.1	7.4
New Hozomeen Lake	21A30	2800	2/27	28	10.0	11.3	14.2
New Tashme	3D01A-Can	2500	3/2	17	4.6	11.8	10.8
Rainy Pass	20A09	4780	2/27	95	33.0	39.6	37.0
Thunder Basin	20A07	4200	2/27	57	18.2	22.2	20.9

BAKER RIVER

Dock Butte	21A11A	3800		Not Measured	70.0	64.2
Easy Pass	21A07A	5200		Not Measured	79.0	71.3
Jasper Pass	21A06A	5400		Not Measured	98.0	82.5
Marten Lake	21A09A	3600		Not Measured	80.0	71.8
Mount Blum +	21A18a	5800		Not Measured	74.0	62.1
Panorama New	21A26	4300		Not Measured	-	66.0
Rocky Creek	21A12A	2100		Not Measured	40.0	30.4
Schreibers Meadow	21A10A	3400		Not Measured	68.0	54.5
S. F. Thunder Creek	21A14A	2200		Not Measured	14.0	11.7
Watson Lakes	21A08A	4500		Not Measured	64.0	60.9

O L Y M P I C P E N I N S U L ADUNGENESS RIVER

Deer Park	23B04	5200	2/28	57	22.1	23.1	18.3
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MORSE CREEK

Cox Valley	23B14	4500	2/25	97	40.2	41.8	36.5
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ELWHA RIVER

Hurricane	23B03	4500	2/26	54	19.3	20.3	20.3
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+ Snow water equivalent estimated from aerial stadia observation

# Average based on 1963-77 average

\* Average for years of record

## SNOTEL READINGS, 1983 - APPENDIX 1

## SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average †
<u>PEND OREILLE RIVER</u>							
Bunchgrass Meadow	17A01	5000	2/16		27.8	16.8	
			3/1		32.2	20.8	
		GT	2/25	89	32.3	(31.2)	
<u>OKANOGAN &amp; METHOW RIVERS</u>							
Harts Pass	20A05	6500	2/15		33.3	-	
			3/1		38.8	-	
		GT	2/26	116	39.3	(38.0)	
Salmon Meadow	19A02	4500	2/15		-	10.3	
			3/1		28.0	13.9	
		GT	2/22	45	13.2	(-)	
<u>CHELAN LAKE BASIN</u>							
Lyman Lake	20A23	5900	2/15		44.4	-	
			3/1		54.2	-	
		GT	3/4	141	56.3	(55.1)	
Mirror Lake	20A39	5600	2/15		-	-	
			3/1		-	-	
		GT	3/4	93	34.5	(-)	
Park Creek Ridge	20A12	4600	2/16		36.0	42.3	
			2/28		41.2	47.9	
		GT	3/4	112	45.5	(-)	
Rainy Pass	20A09	4780	2/15		32.5	-	
			2/28		39.3	-	
		GT	2/27	95	33.0	(38.0)	
<u>ENTIAT RIVER</u>							
Pope Ridge	20B20	3450	2/15		16.5	18.6	
			3/1		18.7	19.7	
		GT	2/28		18.4	(18.4)	
<u>WENATCHEE RIVER</u>							
Blewett Pass	20B02	4270	2/15		17.2	17.1	
			3/1		19.1	18.2	
		GT	3/2	52	15.5	(19.3)	
Lyman Lake	20A23	5900	2/15		44.4	-	
			3/1		54.2		
		GT	3/4	141	56.3	(55.1)	
Stevens Pass	21B01	4070	2/15		20.7	33.7	
			3/1		22.7	34.0	
		GT	2/28	84	34.1	(22.7)	
Trough # 2	20B25	5310	2/15		16.5	12.1	
			2/28		21.1	15.6	
		GT	3/1	54	17.0	(-)	

GT = Ground Truth measurement at SNOTEL site

NOTE: () following Ground Truth Measurement is SNOTEL reading on same date.



## SNOTEL READINGS, 1983 - APPENDIX 2

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average †
<u>COLOCKUM CREEK</u>							
Trough # 2	20B25	5310	2/15		16.5	12.1	
			2/28		21.1	15.6	
			GT 3/1	54	17.0	(-)	
<u>STEMILT CREEK</u>							
Upper Wheeler	20B07	4400	2/15		25.1	21.1	
			3/1		29.1	23.9	
			GT 3/2	51	14.5	(29.4)	
<u>YAKIMA RIVER</u>							
Big Boulder Creek	21B09	3200	2/15		28.8	26.9	
			3/1		19.2	27.7	
			GT 3/1	53	19.6	(19.2)	
Bumping Ridge	21C38	4600	2/15		-	-	
			3/1		-	-	
Corral Pass	21B13	6000	2/15		25.7	34.9	
			3/1		28.6	38.5	
Fish Lake	21B04	3371	2/15		-	-	
			3/1		-	-	
			GT 3/1	73	31.0	(-)	
Green Lake	21C10	6000	2/15		23.5	21.2	
			3/1		26.8	24.2	
			GT 2/24	102	41.3	(26.2)	
Grouse Camp	20B11		2/15		18.1	-	
			3/1		21.6	-	
Morse Lake	21C17	5400	2/16		56.5	53.1	
			3/1		64.0	60.5	
White Pass (E.S.)	21C28	4500	2/15		21.0	25.1	
			3/1		24.7	26.5	
			GT 3/3	66	20.5	(24.9)	
<u>AHTANUM CREEK</u>							
Green Lake	21C10	6000	2/15		23.5	21.2	
			3/1		26.8	24.2	
			GT 2/24	102	41.3	(26.2)	
<u>TOUCHET RIVER</u>							
Touchet # 2	17C55	5530	2/15		27.0	41.0	
			3/1		31.6	44.9	
			GT 2/15	74	21.5	(27.0)	

GT = Ground Truth Measurement at SNOTEL site

NOTE: ( ) following GT measurement is SNOTEL reading on same date.

## SNOTEL READINGS, 1983 - APPENDIX 3

## SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average †
<u>LEWIS RIVER</u>							
June Lake	22C09	3200	2/15		30.0	31.2	
			3/1		30.9	25.5	
Lone Pine Shelter	21C26	3800	2/15		33.2	40.8	
			3/1		37.4	45.0	
Plains of Abraham	22C01	4400	2/15		-	-	
			3/1		-	-	
Sheep Canyon	22C10	4050	2/15		-	34.8	
			3/1		-	-	
Spencer Meadow	21C20	3400	2/15		26.6	-	
			3/1		28.7	-	
Surprise Lakes	21C13	4250	2/15		42.0	47.8	
			3/1		46.4	53.5	
<u>COWLITZ RIVER</u>							
Pigtail Peak	21C33	5900	2/15		39.8	-	
			3/1		44.9	52.1	
Potato Hill	21C14	4500	2/15		-	-	
			3/1		-	-	
Sheep Canyon	22C10	4050	2/15		-	34.8	
			3/1		-	-	
Strawberry Landing	22C08	3280	2/15		30.3	56.2	
			3/1		32.8	58.7	
<u>NISQUALLY RIVER</u>							
Paradise Park	21C35	5500	2/15		-	-	
			3/1		-	-	
<u>WHITE RIVER</u>							
Corral Pass	21B13	6000	2/15		25.7	34.9	
			3/1		28.6	38.5	
Morse Lake	21C17	5400	2/15		56.5	53.1	
			3/1		64.0	60.5	
<u>GREEN RIVER</u>							
Cougar Mtn.	21B42	3200	2/15		7.2	24.9	
			3/1		5.3	23.5	
Stampede Pass	21B10	3860	2/15		30.2	48.0	
			3/1		33.9	-	
	GT		3/2	78	33.8 (34.0)		
<u>SNOQUALMIE RIVER</u>							
Olallie Meadows East	21B55	3960	2/15		41.0	-	
			3/1		44.2	-	

GT = Ground Truth measurement at SNOTEL site

NOTE: ( ) following GT measurement is SNOTEL reading on same date.





# Agencies Assisting with Snow Surveys

## GOVERNMENT AGENCIES

### Canada:

Ministry of the Environment, Water  
Investigations Branch, Victoria, British Columbia

### States:

Washington State Department of Ecology  
Washington State Department of Natural Resources

### Federal:

Department of the Army  
Corps of Engineers  
U. S. Department of Agriculture  
Forest Service  
U. S. Department of Commerce  
NOAA, National Weather Service  
U. S. Department of the Interior  
Bonneville Power Administration  
Bureau of Reclamation  
Geological Survey  
National Park Service

## PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.  
Pacific Power and Light Company  
Puget Sound Power and Light Company  
Washington Water Power Company

## OTHER PUBLIC AGENCIES

Okanogan Irrigation District  
Wenatchee Heights Irrigation District

## MUNICIPALITIES

City of Tacoma  
City of Seattle

*Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.*

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